# NOTES ON THE NEARCTIC ANTHOPHAGINI WITH A KEY TO THE GENERA (COLEOPTERA: STAPHYLINIDAE)

*By* IAN MOORE[1, 2]

Considerable confusion exists in the Nearctic literature concerning the characterization of a number of genera of the Anthophagini, the largest tribe of the subfamily Omaliinae. In the present paper I am presenting the results of some studies of the group, partly in order to correct some existing errors, but largely in order to present a new key to the Nearctic genera. Members of all the genera have been examined.

The Omaliinae can be distinguished from all other Nearctic staphylinids except the Leptotyphlinae by the presence of a pair of pale mounds on the upper surface of the head near a line drawn through the posterior margin of the eyes. (*Vellica longipennis* Casey lacks these structures but is obviously a member of the tribe.) These mounds have generally been called "ocelli." Coiffait, 1959, demonstrated that they are not true ocelli as found in the Orthoptera and Hymenoptera, but mark the point of attachment of the posterior arm of the tentorum. He proposed the name *frontal calluses* for these structures. The Omaliinae differ from the Leptotyphlinae in having five-segmented tarsi, whereas a lesser number is present in the latter subfamily.

The Anthophagini may be briefly characterized as follows: last segment of maxillary palpi longer than width of penultimate, usually not narrower than penultimate; tarsi with first four segments not wider than fifth segment; last segment of posterior tarsi shorter than first four together, segments two through four usually decreasing in length.

Members of this tribe are known largely from the Holarctic region. Others have been found in Australia, New Zealand and the Andean areas of Chile and Argentina. Most of the few known tropic species were probably collected at high altitudes.

Although the key to the genera which follows is clear, the use of it involves considerable difficulty due to the fact that the generic differences in this tribe are often slight and not easy to observe. This is particularly evident in the palpal and tarsal structure. The terminal segments of the maxillary palpus and the posterior tarsus of a member of each genus are illustrated to facilitate identification. Members of each genus usually conform to a characteristic facies which is difficult to define. Consequently, an outline drawing of a member of each genus, as seen from above, is given as a further aid to identification.

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[1] Associate in Entomology, San Diego Natural History Museum, San Diego, California.

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## KEY TO THE NEARCTIC GENERA OF THE ANTHOPHAGINI

1. First segment of posterior tarsi about as long as, or longer than last segment------ 2
First segment of posterior tarsi shorter than last segment-------------------- 7
2. Last segment of maxillary palpi not more than twice as long as penultimate-------- 3
Last segment of maxillary palpi more than twice as long as penultimate---------- 5
3. Last segment of maxillary palpi not distinctly narrower than penultimate-------- 4
Last segment of maxillary palpi distinctly narrower than penultimate **OROBANUS** LeConte
4. Penultimate tarsomere bilobed------------------------------**PELECOMALIUM** Casey
Penultimate tarsomere not bilobed--------------------------**AMPHICHROUM** Kraatz
5. Head with impressed nuchal line-----------------------------------**UNAMIS** Casey
Head without nuchal line-------------------------------------------------- 6
6. Head with a pair of frontal calluses between eyes----------**PHLAEOPTERUS** Motschoulsky
Head without frontal calluses---------------------------------------**VELLICA** Casey
7. Last segment of maxillary palpi narrower than apex of penultimate-------------- 8
Last segment of maxillary palpi not narrower than apex of penultimate---------- 9
8. Last segment of maxillary palpi slender, parallel sided------------**MICROEDUS** LeConte
Last segment of maxillary palpi fusiform------------------**GEODROMICUS** Redtenbacher
9. All antennomeres densely pubescent ------------------------------------------ 10
First four antennomeres glabrous except for a few long setae----------------- 11
10. Penultimate segment of maxillary palpi one-half longer than wide--------**ARTOCHIA** Casey
Penultimate segment of maxillary palpi not longer than wide----------**LESTEVA** Latreille
11. Second antennomere twice as long as third--------------------**PORRHODITES** Kraatz
Second antennomere not longer than third------------------------------------- 12
12. First segment of posterior tarsi one-half longer than second------------**ACIDOTA** Stephens
First segment of posterior tarsi not or very little longer than second------------ 13
13. Head with well-impressed nuchal line; last segment of maxillary palpi seldom longer than penultimate----------------------------------------------- 14
Nuchal line absent or feeble; last segment of maxillary palpi usually longer than penultimate ------------------------------------------------------- 17
14. Base of pronotum tumid, reflexed---------------------------**PARADELIPHRUM** Hatch
Base of pronotum not tumid, not reflexed--------------------------------- 15
15. Tarsi with a small membranous bilobed pad at base of ungues--**ANTHOPHAGUS** Gravenhorst
Tarsi without pad at base of ungues--------------------------------------- 16
16. Last segment of maxillary palpi not more than one-half longer than penultimate -------------------------------------------**ARPEDIUM** Erichson
Last segment of maxillary palpi more than twice as long as penultimate ------------------------------------------------**XYLODROMUS** Heer
17. Pronotum not widest at base ------------------------------------------- 18
Pronotum widest at base-------------------------------------------------- 21
18. Mesosternum carinate---------------------------------**MATHRILAEUM** NEW GENUS
Mesosternum not carinate------------------------------------------------- 19
19. Gular sutures united (or extremely approximate)------------------**OLOPHRUM** Erichson
Gular sutures distinctly separate--------------------------------------- 20
20. Head abruptly constricted behind eyes to form a distinct neck; tempora much shorter than eyes------------------------------------------------**ANTHOBIUM** Leach
Head not constricted behind eyes; tempora longer than eyes----------**OROCHARES** Kraatz
21. Head produced in a beak which anterior to eyes is one-half longer than wide -----------------------------------------**TANYRRHINUS** Mannerheim
Head anterior to eyes not longer than wide-----------------**TRIGONODEMUS** LeConte

## DISCUSSIONS

OROBANUS. Members of this genus are distinctive within this tribe in that the last segment of the maxillary palpi is shorter and much narrower than the preceding segment. In *Microedus* and *Geodromicus* a similar but much less pronounced condition occurs. In the latter two genera, the first segment of the posterior tarsus is much shorter than the last segment, whereas in *Orobanus* the first segment is longer than the last.

Seven species are known from the Western United States and British Columbia. The genus was revised by Mank, 1934.

PELECOMALIUM. The bilobed penultimate tarsomere is a unique character within the tribe, as also is the strongly sexually dimorphic maxillary palpus.

Twelve species are at present recognized in this genus. Eleven of these are known from the Western United States, British Columbia and Alaska. The other is from Pennsylvania.

Some of Casey's species appear to be weakly separated from *scutatum* and *opaculum*; the color is variable and other differences given seem light.

AMPHICROUM. Members of this genus resemble those of *Pelecomalium* but differ in palpal and tarsal structure.

Three Nearctic species are known from Southern California to Alaska. Seven species have been described from the Palaearctic region and two from India.

UNAMIS. There is no single outstanding character to distinguish these small dark insects. They resemble members of *Phlaeopterus,* from which they differ in having a transverse impressed line across the upper surface of the head, just behind the frontal calluses.

The four known species are found on the Pacific coast from British Columbia to middle California. Hatch, 1957, gives a key to the species.

PHLAEOPTERUS. These are moderate-sized dark insects which are usually rather strongly flattened dorso-ventrally.

The fourteen described species are from the Western United States, Western Canada and Alaska. All but three of these are treated by Hatch, 1957.

VELLICA. The single species, *longipennis* Casey, is remarkable in lacking frontal calluses. Structurally it resembles *Phlaeopterus* and *Unamis,* but is small and not depressed. It is apparently not common in Northern California.

*Vellica* is an example of the exception so often encountered in taxonomy. The outstanding characteristic of the group is lacking, but the insect is otherwise so similar to others of the group that it cannot be excluded merely because it lacks frontal calluses. Conversely, *Brathinus* must be excluded from the family Staphylinidae (as explained later), although it has frontal calluses.

MICROEDUS. These small, dark insects are structurally similar to members of *Geodromicus,* but differ in palpal structure. The last segment of the maxillary palpus is somewhat narrower than the preceding and is nearly parallel-sided for most of its length. In *Geodromicus,* the last segment is thickened centrally and gradually narrowed to base and to apex. In members of both of these genera the fourth posterior tarsomere has beneath, extending distally from its apex, a small, membranous appendage, the apex of which bears a pair of long setae which extend between the ungues. I have not observed this structure in other members of the tribe.

Six species are known from the western United States and British Columbia, and one of these is also found in Newfoundland. Hatch, 1957, treated all of the species.

GEODROMICUS. These moderate-sized beetles are sometimes marked with patterns of red or yellow. An unusual appendage on the underside of the posterior tarsus is described in the notes under *Microedus.*

Twelve species are reported from the Nearctic region, two of which are also known from Europe. Twenty-five other species have been described from the Palaearctic region and sixteen from India.

ARTOCHIA. The elongation of the front of the head is unusual in this subfamily. A much more pronounced elongation of the head occurs in *Tanyrrhinus,* but the palpal structure and the facies will readily distinguish them. The form of the maxillary palpi (as illustrated) will aid in identification of members of the genus.

The two known species, both from California, are apparently rare. The elytra of *productifrons* are as long as wide, whereas in *californica* they are much longer than wide.

LESTEVA. The palpal structure is the most distinguishing characteristic of species of this genus. The very short penultimate segment and the very long last segment is an unusual combination.

Two species are known from the Northern United States, Canada and Alaska. Twenty-four other species have been described from the Palaearctic region and four from India.

Casey, 1893, erected the genus *Tevales* for a new species, *cribratulus.* At the same time, he proposed the generic name *Pseudolesteva* for *Lesteva pallipes* LeConte, later changing the generic name to *Paralesteva* on the assumption that *Pseudolesteva* was preoccupied. Steel, 1952, showed that the two species for which Casey has established these two genera were not sufficiently distinct to warrant separate genera for them. He united them with *Lesteva.*

Blackwelder, 1952, demonstrated that the type-species of *Lesteva* is in the genus called *Anthophagus,* which name (under a strict application of the rules) it should replace. Since this left the genus without a name, he proposed the name *Lesta* for it. Blackwelder was unaware of Steel's study of the same year, which synonymized *Tevales, Pseudolesteva* and *Paralesteva* with *Lesteva.* If a strict application of the rules is to be accepted, the correct name to apply to this genus would be *Tevales* Casey. However, much confusion would exist if this name were changed. Subsequent students have continued to use the names *Lesteva* and *Anthophagus* in their original sense. It is reasonable to assume that the International Commission on Zoological Nomenclature will conserve these older names. Consequently, I am using the older name, *Lesteva,* for this genus, and *Anthophagus* for the genus which has long been known by that name. Assuming that the International Commission on Zoological Nomenclature will conserve the name *Lesteva* in its original sense, the American species should be listed as follows: *Lesteva* Latreille, 1896, with *Tevales* Casey, 1893, *Pseudolesteva* Casey, 1893, *Paralesteva* Casey, 1905, and *Lesta* Blackwelder, 1952, as synonyms, and with two species, *cribratulus* (Casey), 1893, and *pallipes* LeConte, 1863.

PORRHODITES. A second antennomere, twice as long as the third, is unique within the tribe. In other members of the tribe this segment is not longer than the third and often much shorter.

A single circumpolar species of this genus has been reported from Labrador, Michigan, Colorado, British Columbia, Alaska and Europe.

ACIDOTA. There is no single character to distinguish members of this genus from others of the tribe. They are coarsely sculptured, with shining integuments.

The three known American species are northern in distribution. Two of the American species and five other species are found in the Palaearctic region.

PARADELIPHRUM. The tumid, reflexed base of the pronotum is not pronounced but is an unusual character.

Hatch, 1957, described this genus and two species, *tumidum* from British Columbia and Oregon, and *inflatum* from British Columbia. I have seen specimens of the latter from California and Colorado.

ANTHOPHAGUS. As this genus has not previously been reported from America, a generic description follows:

Head oval, strongly constricted behind to form a neck; with a definite nuchal constriction across the dorsal surface; with a discrete longitudinal impression each side before the frontal calluses. Labrum tranverse, shallowly emarginate in front. Mandibles stout, pointed. Maxillary palpi four-segmented; first segment small; second elongate, curved, widest at apex; third about as long as second, apex wider than second; fourth a little longer and almost as wide as third, narrowed apically. Outer lobe of maxillae longer than inner lobe, curved at apex, which is densely pubescent; inner lobe hooked at apex, inner margin setose and pubescent. Ligula triangularly emarginate at apex. Labial palpi three-segmented; first segment short; second longer, swollen apically; third about as long as second, narrower, cylindrical. Gular sutures united at middle, widely divergent behind.

Pronotum about as wide as head, constricted behind. Prosternal process pointed, extending halfway between the coxae. Mesosternum not carinate, its process short and pointed. Middle coxae contiguous. Elytra wider than pronotum.

Tibiae pubescent, with a few spines externally. Posterior tarsi with first four segments short, subequal, fifth a little shorter than the first four together. With a small bilobed membranous pad between the ungues.

This genus differs from all other omaliinids in the presence of the small bilobed membranous pad between the claws.

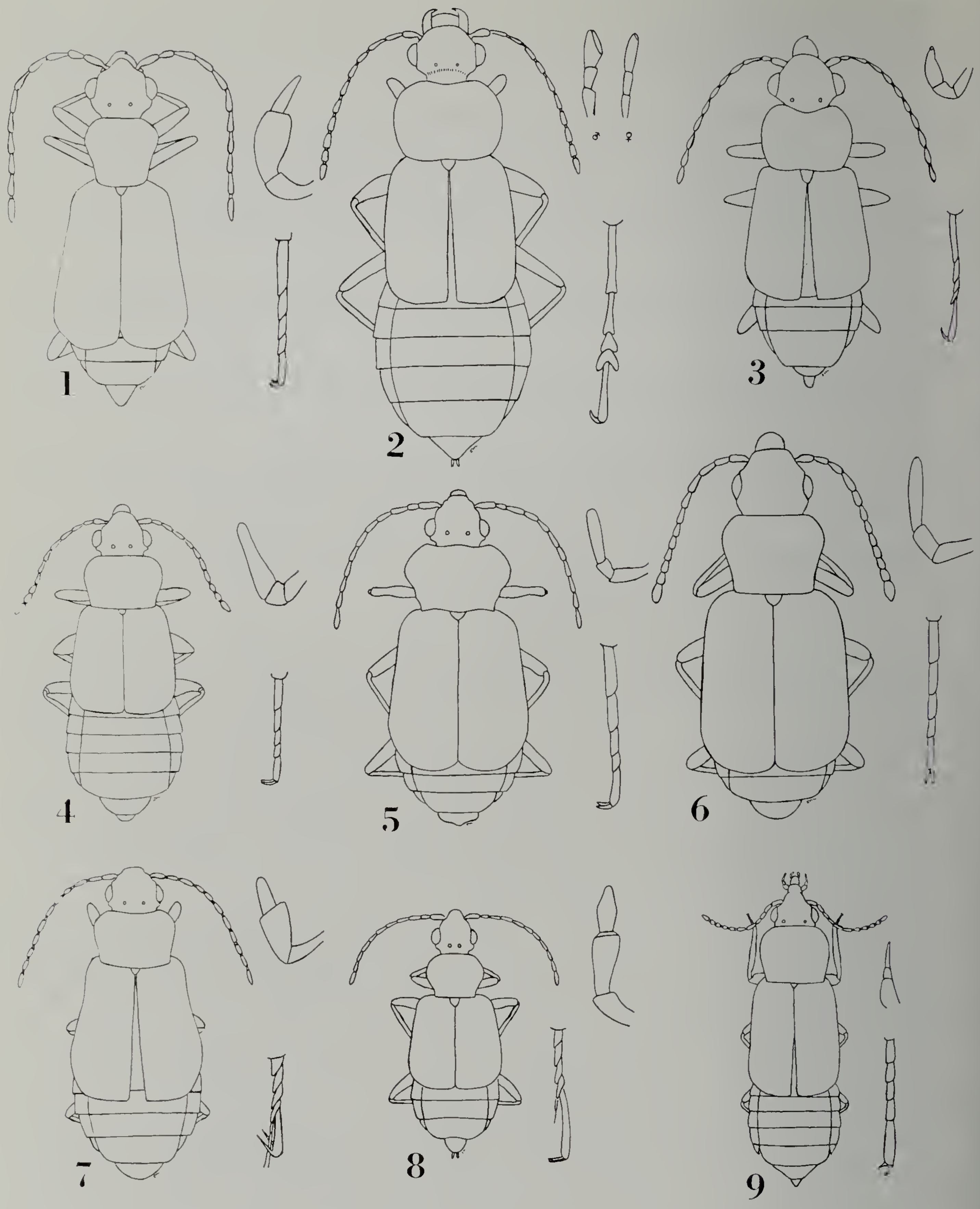
The use of this name rather than *Lesteva* for this genus, as proposed by Blackwelder, 1952, has been discussed in the notes under the genus *Lesteva.*

A series of specimens very similar to the European *A. caraboides* Linné was collected at Prairie Creek, California, by Van Dyke in August, 1939. These are now being studied by William O. Steel.

Thirty-two species of this genus are known from Europe, and three species from Japan.

ARPEDIUM. Members of this genus vary considerably in facies. The distinguishing generic characters are not pronounced.

Of the nine species reported from America, at least three are also known from the Palaearctic region. Fourteen other species have been



FIGURES 1-9. Neartic Anthophagini, one species of each genus; outline drawings of the body, as seen from above, the last three segments of the maxillary palpus, and the posterior tarsus.. 1—*Orobanus densus* Casey. 2—*Pelecomalium puberulum* Fauvel. 3—*Amphicroum floribundum* LeConte. 4—*Unamis truncata* Casey. 5—*Phlaeopterus fusconiger* Motschoulsky. 6—*Vellica longipennis* Casey. 7—*Microedus ewingi* Hatch. 8—*Geodromicus plagiatus* (Fabricius). 9—*Artochia californica* Bernhauer.

described from the Palaearctic region and one, a doubtful member of the genus, from India. The American species are difficult to identify from the existing literature.

XYLODROMUS. The American species tend to be parallel in form with moniliform antennae.

Although I have not seen Casey's types, his descriptions are in sufficient detail to lead me to believe that the synonomy in the following list of the three Nearctic species is correct.

*capito* (Casey) NEW COMBINATION. *(Omalium)*
*concinnus* (Marsham)
  *lacustre* Casey NEW SYNONYMY. *(Omalium)*
*depressus* (Gravenhorst)

*Capito* was described from Wisconsin. The other two species are widely distributed in the northern part of the continent and also in the Palaearctic region, from which seven other species are known.

## MATHRILAEUM Moore NEW GENUS.

Head wider than long; somewhat produced in front, the anterior margin vaguely tumid; irregularly impressed before the frontal calluses; eyes large, prominent; sides with a strongly reflexed border behind the eyes, thence abruptly narrowed to a broad neck. Antennae incrassate. Labrum transverse, emarginate in front. Mandibles stout, base thickened, abruptly flattened in apical third, strongly arcuate and hooked at apex. Maxillary palpi four-segmented; first segment short; second elongate, arcuate, widest at apex; third shorter than and about as wide as second; fourth wider and longer than second, gradually narrowed to apex. Outer lobe of maxillae longer and wider than inner lobe, externally at apex with a row of spines, internally densely pubescent; inner lobe hooked at tip, setose internally. Ligula tranverse, apex emarginate, with a central chitonous rod. Labial palpi three-segmented; first segment longer than wide; second a little narrower than first, tranverse; third narrower than second, longer than wide, subcylindrical. Mentum large, trapezoidal. Gular sutures united at the middle, widely divergent behind.

Pronotum transverse, subquadrate, side margins crenulate. Prosternum tumid in the middle, its process long and pointed. Mesosternum strongly, longitudinally carinate, its process long, pointed, extending more than halfway between the coxae. Metasternal process short, rounded, not meeting the mesosternal process. Elytra covering most of the abdomen; with impressed longitudinal striae.

Tibiae without spines on the outer edge. Hind tarsi with the first four segments short, progressively decreasing a little in length; fifth segment shorter than first four together.

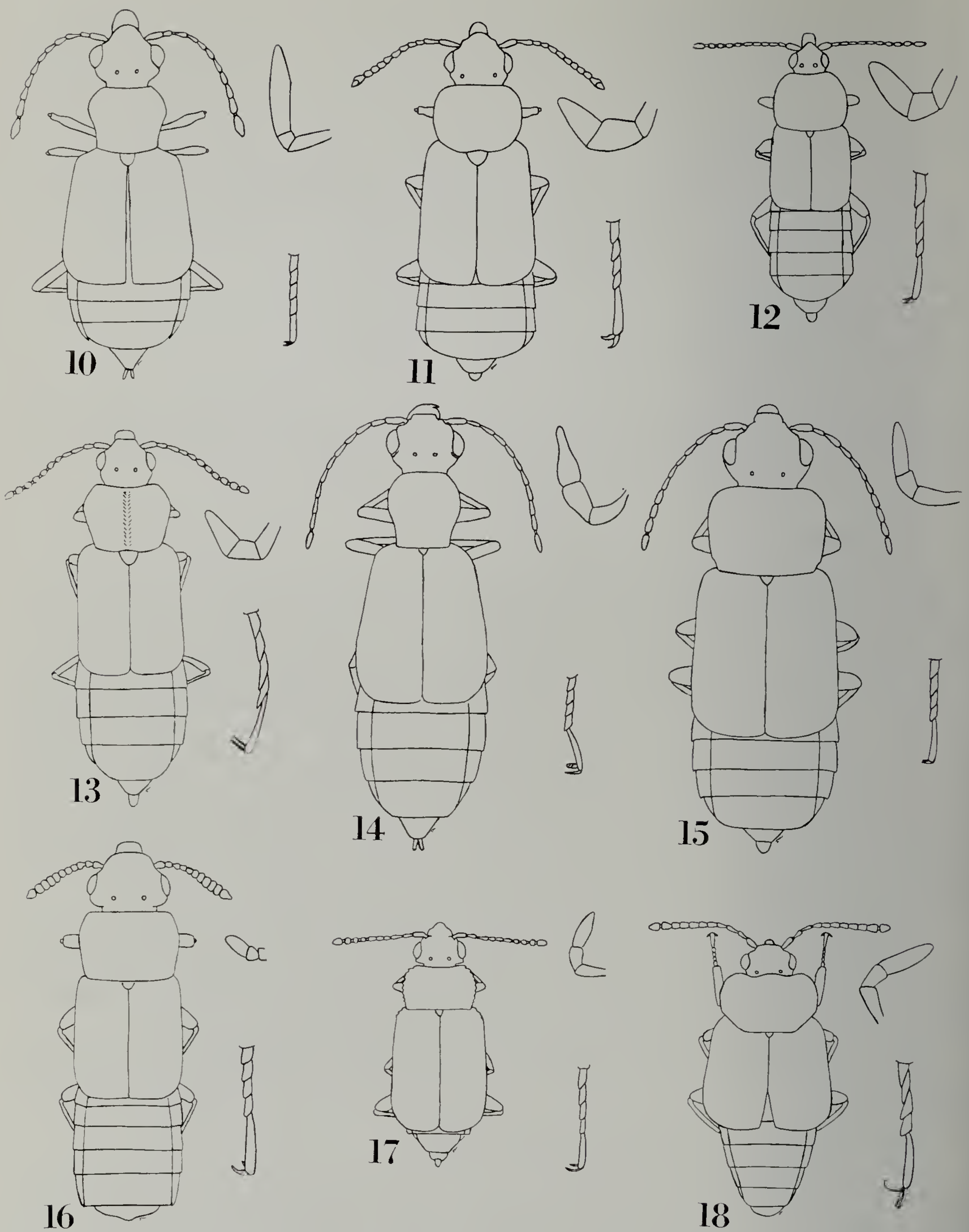
*Type-species: Lathrimaeum pictum* Fauvel.

Also included in this genus is *Lathrimaeum subcostatum* Mäklin. These two species have always been placed in the genus now called *Anthobium*. In *Anthobium* the mesosternum is not carinate, the gular sutures are separated and the tibiae usually have a few spines externally.

The two known species are found in fungus from British Columbia to middle California.

### KEY TO THE SPECIES OF MATHRILAEUM

| | |
|---|---|
| Elytra with three to five rows of punctures between suture and first raised interspace | SUBCOSTATUM (Maklin) |
| Elytra with single row of punctures between suture and first raised interspace | PICTUM (Fauvel) |



FIGURES 10-18. Nearctic Anthophagini, one species of each genus; outline drawings of the body, as seen from above, the last three segments of the maxillary palpus and the posterior tarsus. 10—*Lesteva cribratulus* (Casey). 11—*Porrhodites fenestralis* (Zetterstedt). 12—*Acidota quadrata* Zetterstedt. 13—*Paradeliphrum inflatum* Hatch. 14—*Anthophagus* sp. 15—*Arpedium quadrum* (Gravenhorst). 16—*Xylodromus depressus* (Gravenhorst). 17—*Mathrilaeum pictum* (Fauvel). 18—*Olophrum obtectum* Erichson.

OLOPHRUM. It has usually been stated that members of this genus lack spines on the outer edge of the tibiae, a character which has been used to differentiate several related genera. This character is variable within this genus, some species having no spines, others a few and some quite a number. The character cannot be employed advantageously in this section of the tribe.

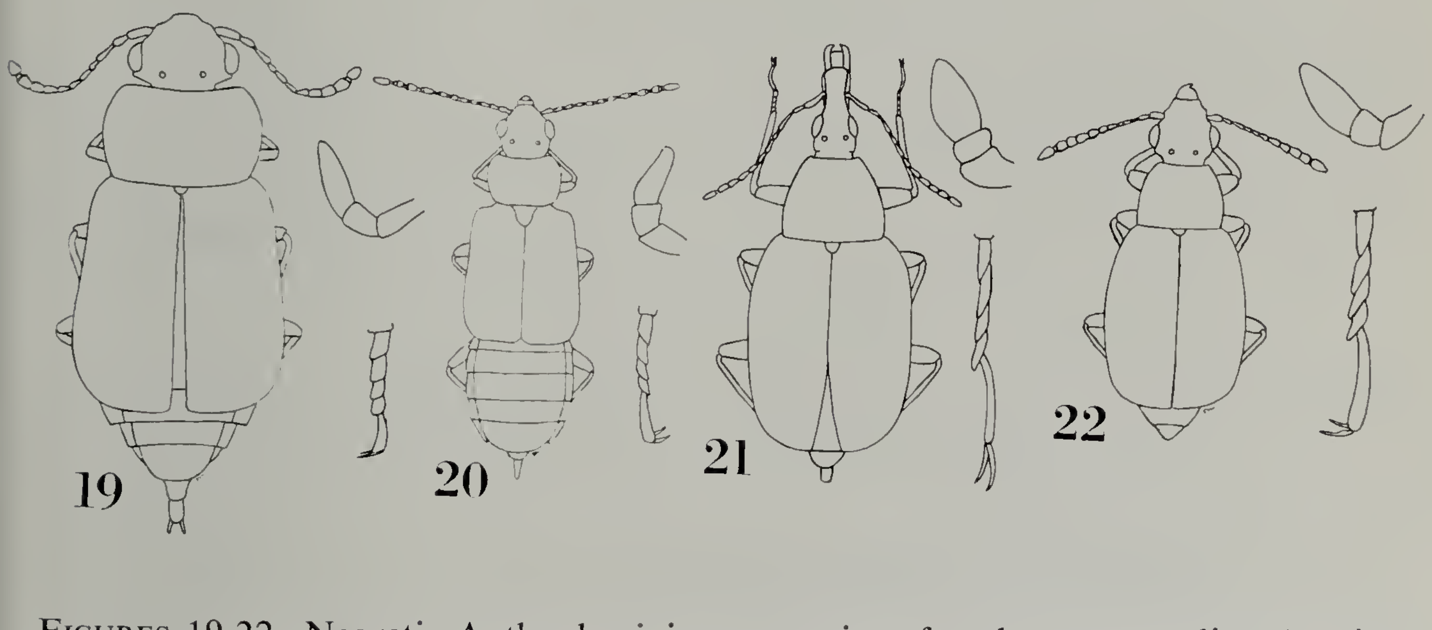
I have seen specimens of *Olophrum nigropiceum* Motschoulsky from Alaska, previously known only from Siberia.

Thirteen Nearctic species are known, four of which are also reported from the Palaearctic region. Thirty-six other Palaearctic species, and one species from India, have been described.

ANTHOBIUM. Members of this genus have no single outstanding character for their easy recognition. It has usually been stated that the tibiae of members of this genus are not spinose on the outer edge, one of the characters used to separate the genus from *Deliphrum*. The type-species, *melanocephalum* (Gyllenhal), and a number of other species have a distinct series of small spines interspersed with the pubescence on the outer edge of the tibiae. As with *Olophrum,* this is not a dependable character. I can find no character of importance to separate the type-species of *Deliphrum, tectum* (Paykull), from *Anthobium melanocephalum* (Gyllenhal), so I am uniting the two genera (NEW SYNONYMY).

*Anthobium pictum* (Fauvel) and *subcostatum* (Mäklin) have been removed in this paper to the new genus *Mathrilaeum.*

The Nearctic species are as follows: *Anthobium aequicolle* (Casey) NEW COMBINATION *(Deliphrum), atrocephalum* (Gyllenhal), *clarki* Hatch, *crenulatum* Hatch, *expansum* (LeConte) NEW COMBINATION *(Deliphrum), fimetarium* (Mannerheim), *marginatum* (Kirby & Spence), *nigropiceum* (Casey), *occiduum* (Casey) NEW COMBINATION *(Deliphrum), reflexicolle* (Casey), *sinuosum* Hatch, and *spretum* Hatch.



FIGURES 19-22. Nearctic Anthophagini, one species of each genus; outline drawings of the body, as seen from above, the last three segments of the maxillary palpus and the posterior tarsus. 19—*Anthobium atrocephalum* (Gyllenhal). 20—*Orochares angustata* (Erichson). 21—*Tanyrrhinus singularis* Mannerheim. 22—*Trigonodemus striatus* LeConte.

Of the above twelve species, only one, *atrocephalum,* is reported from the Palaearctic region. Twenty-eight other species have been described from the Palaearctic region and eight from India.

OROCHARES. The only known species, the European *angustata* (Erichson), has been reported from Massachusetts. Although this record appears to be in doubt, its inclusion here will facilitate its recognition should it be found to be established in this country.

TANYRRHINUS. Aside from its unusual facies with the elongate head, there is little to distinguish the single species of this genus from other genera of the *Anthophagini.* It is known from Alaska to middle California.

TRIGONODEMUS. The species are very similar to *Tanyrrhinus singularis* Mannerheim, but lack the long beak. Only two species are known, both from the Nearctic region.

BRATHINUS LeConte. Some authors have treated this genus as a member of this tribe. Others have put it in a family by itself. I am excluding it from the Staphylinidae because the first four tergites (dorsal segments three through six) are membranous.

EUNONIA Casey. I have seen two specimens in the Bernhauer collection labeled *"Eunonia keeninana* Casey," collected near Prince Rupert, British Columbia, by Keen. They answer perfectly to Casey's description of this species except for the absence of frontal calluses. They are specimens of a species of *Syntomium,* either identical with or very similar to *Syntomium malkini* Hatch. The head is very roughly sculptured in this species, which probably led Casey to believe that he detected "ocelli." Thus, *Eunonia* Casey, 1904, equals *Syntomium* Curtis, 1828 (NEW SYNONYMY); the genus belongs in the Oxytelinae.

REVELSTOKEA. *Revelstokea hopping* Hatch is being treated by William O. Steel.

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